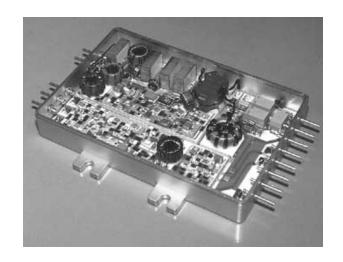
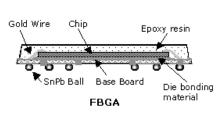
# GSFC EEE Parts Information

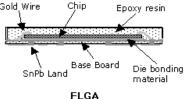
Darryl Lakins, Code 562
Cheryl Derrington, QSS Group Inc.
Jeannette Plante, Dynamic Range Corporation
Carl Szabo, QSS Group Inc.

### Session Overview

- Code 562 Services, Processes and Goals
- GSFC Parts Information
  - NEPP Website
  - PEM Database
  - Parts Analysis Database
  - Parts Engineers Database
- Advanced Search and Knowledge Trees
- Q & A







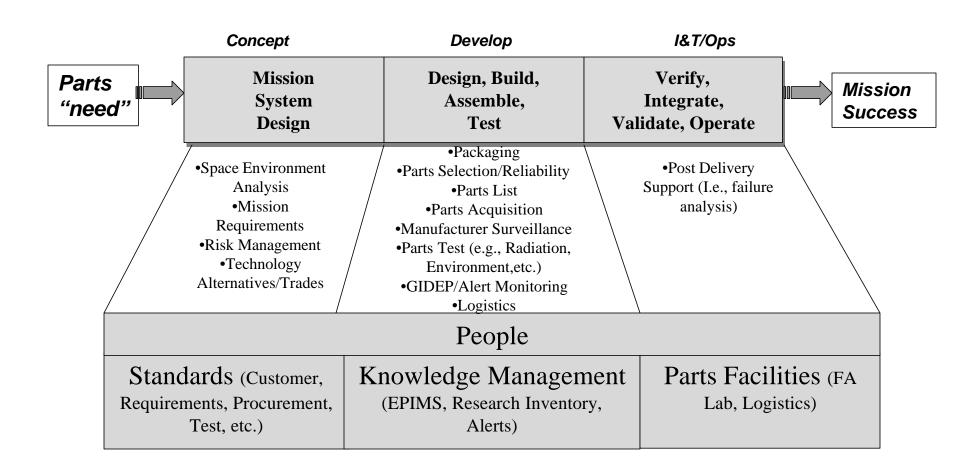
### Code 562

Parts, Packaging and Assembly Technology Office
Darryl Lakins, Head
Harry Shaw, Chief Technologist
Henning Leidecker, Chief Engineer

Parts Engineering	Advanced Component Technologies	Space Flight Manufacturing and Assembly
Project Parts Engineers EEE Parts Laboratories Failure Analysis	Fiber Optics/Photonics Development Advanced Packaging Laboratories Nanotechnology Material Science	Board and Box Level Assembly & Rework

PPE's, FA/DPA specialists, Electrical Test specialists, R&D engineers, Process specialists, Packaging Specialists
Approximately 30 scientists, engineers, technicians, and students

### Parts Engineering Process



### Standard Services

Parts List Analysis (BB, EM, FT): assurance, cost, availability, packaging

Produce standardized part processing methods and policy for flight parts including PCP's and PCIP's

<u>Facilitate part selection and write performance/assurance specifications</u> including testing instructions

Facilitate materials logistics including procurement, materials logistics, storage, kitting

Perform screening and qualification testing of flight parts, including data analysis

Assembly of Fiber Optic Cables, PCB board layout, Board stuffing

Failure analysis and problem/anomaly resolution

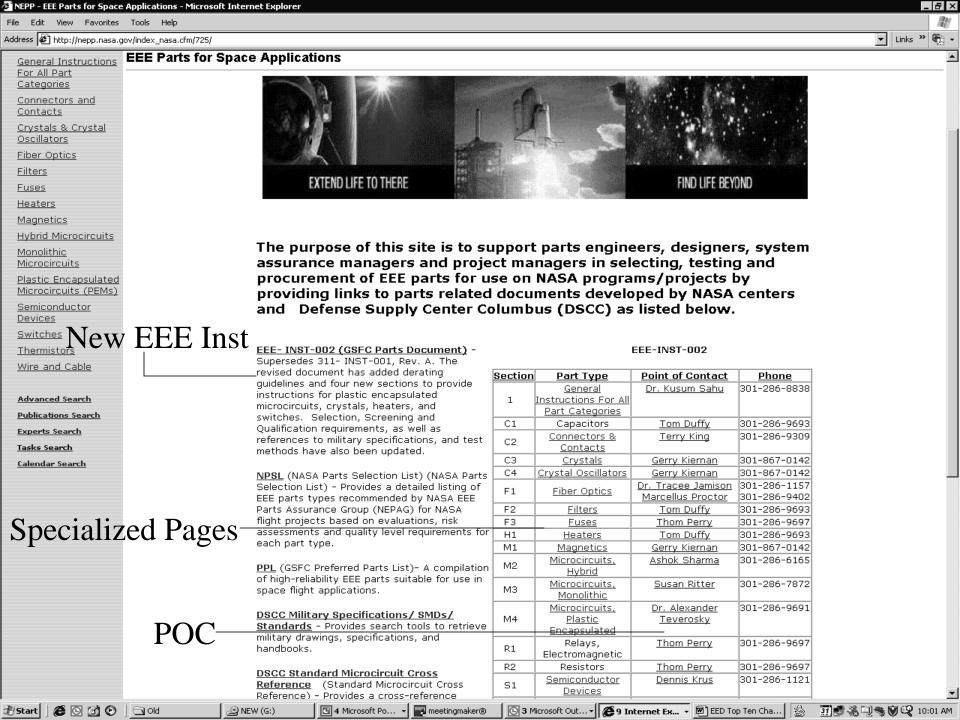
**Reliability Evaluations** 

New Technology Evaluations

**Technology Development** 

### Challenges

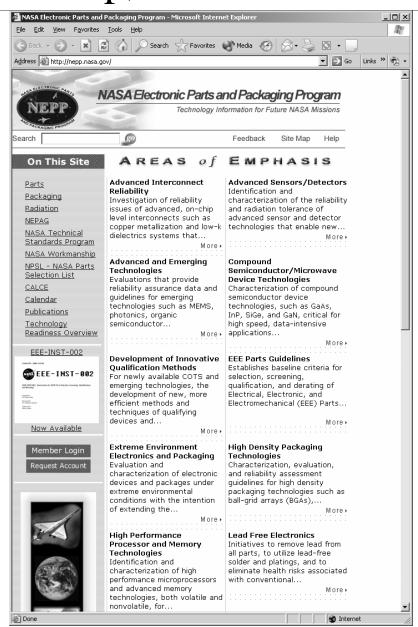
- Review, Sort and Conversion of hardcopies to electronic documents.
- Insertion of documents into database that is linked with Standards website to ensure all documents are accessible from the either the standards website, GSFC GDMS and the NEPP portal.
- Establishment of new standards as new capabilities come online.
- Staying abreast of the changes that industry is making to facilitate adoption of new standards.
- Monitoring our suppliers and understanding the complete supply chain from forecasting and obsolescence; to procurement and handling.
- Crossing organizational boundaries.



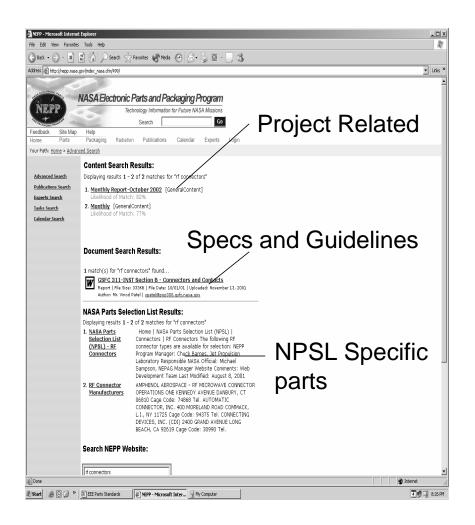
## The NEPP Website Carl Szabo, QSS Group, Inc.

#### URL: <a href="http://nepp.nasa.gov">http://nepp.nasa.gov</a>

- The NEPP Website is a public portal to technology information regarding:
  - Parts
  - Packaging
  - Radiation
  - Standards
  - Events
- Each is classified by *Areas of Emphasis*



### Current Parts Engineering Portal

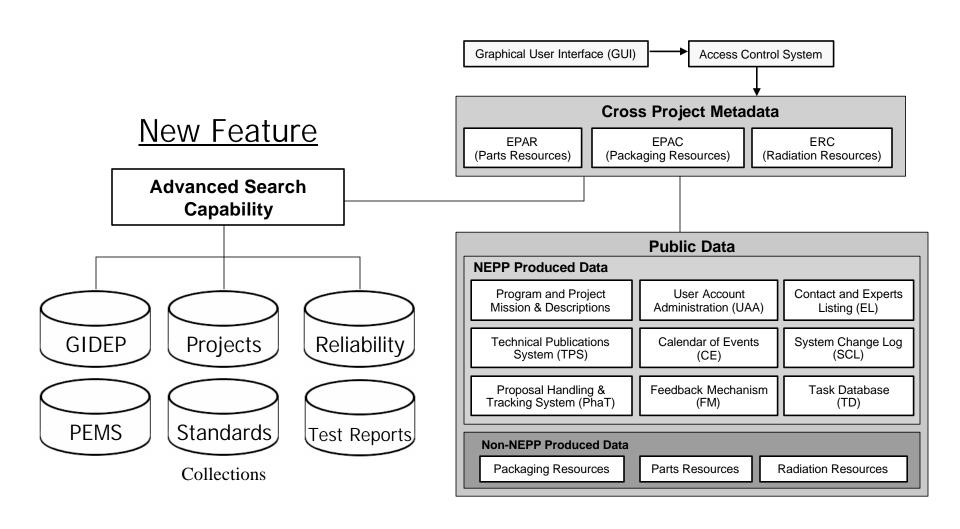


• System (portal) search is capable of searching multiple databases, filing systems and websites simultaneously. The results are arranged so that the user can view related information regarding a EEE parts.

#### • Example:

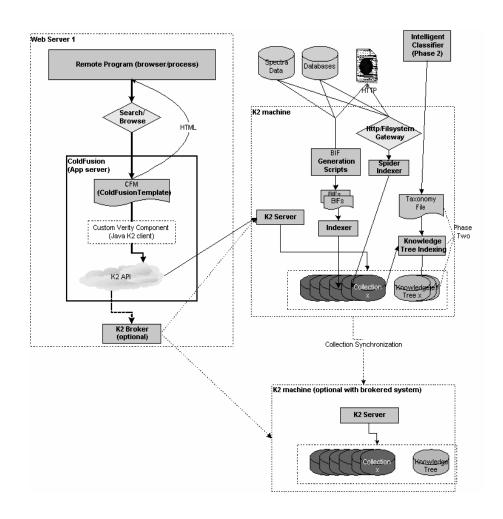
- "RF connectors" was the search term.
- The system provided the user project related information, specific standards and guidelines, research documents and specific part information.

### NEPP Information System Architecture



### NEPP Information System Database

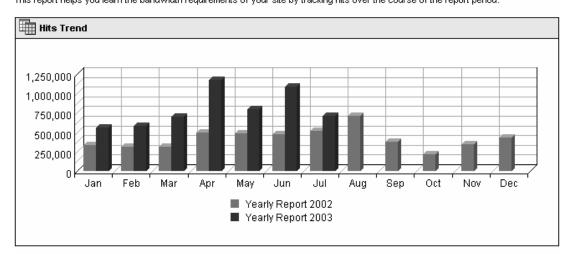
- Website Content
  - Pages
  - Experts
  - Events
- User Information
- Parts Library
  - Provides information regarding parts use, testing and lessons learned.
- EEE Parts Research
  - Provides information
     associated with emerging
     technologies so that NASA
     engineers are given a sneak
     preview of the reliability of
     new "sweet" parts.



### NEPP Website Usage

- NEPP Architecture was deployed in early FY '02
- NEPP resources gained considerable popularity in 2003
- YTD NEPP activity surpasses all of 2002
- Monthly activity has increased by an average of 94%





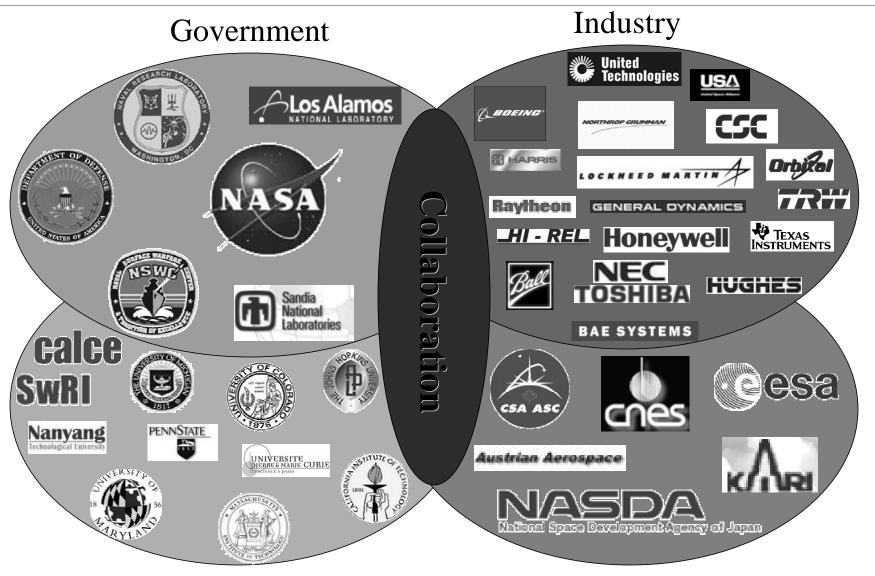
Time Interval	Yearly Report 2002 Hits	Yearly Report 2003 Hits	% Change
Jan	334,589	557,570	+66.64% 🔺
Feb	309,218	583,108	+88.58% ▲
Mar	310,598	702,731	+126.25% 🔺
Apr	496,386	1,178,276	+137.37% ▲
May	488,269	793,039	+62.42% ▲
Jun	478,425	1,084,363	+126.65% ▲
Jul	514,548	713,077	+38.58% ▲
Aug	716,128	0	N/A
Sep	380,483	0	N/A
Oct	213,725	0	N/A
Nov	340,591	0	N/A
Dec	431,766	0	N/A
Total	5,014,726	5,612,164	+11.91% 🔺

### Requested Information

- Search engine statistics reveal the information our visitors seek
- NEPP receives many inquiries for part numbers, and specifications
- Visitors from Google account for 72% of NEPP's search engine referrals

	DL		<u></u>
ngines —	Phrases	Referrals	%
■1. google	mil-c-27500	256	0.40
	tin whiskers	224	0.35
	d38999	194	0.31
	electronic parts	163	0.26
	resistor manufacturer	128	0.20
	m39014	121	0.19
	resistor manufacturers	119	0.19
	m83513	108	0.17
	rlr07	101	0.10
	m38510	92	0.1
	rwr81	91	0.1
	cwr09	91	0.1
	stereo parts	90	0.1
	tin whisker	89	0.1
	перр	88	0.1
	mil-c-17	84	0.1
	mil-w-22759	72	0.1
	inductor manufacturer	70	0.1
	zinc whiskers	59	0.0
	mil-c-55302	53	0.0
	rlr05	53	0.0
	cadmium plating	51	0.0
	inductor manufacturers	50	0.0
	mil-prf-83513	49	0.0
	hm628512	48	0.0
	38999 connectors	45	0.0
	capacitor manufacturer	45	0.0
	m39012	42	0.0
	ms27508	36	0.0
	cwr06	35	0.0

#### Who Visits the Website?



Academia

Foreign Agencies

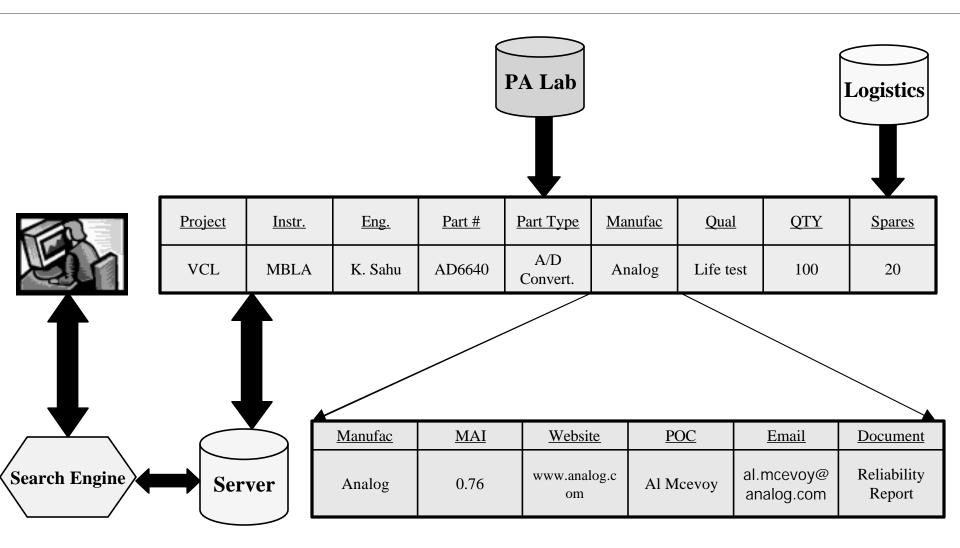
### GSFC EEE Parts Database Tour Cheryl Derrington, QSS Group Inc.

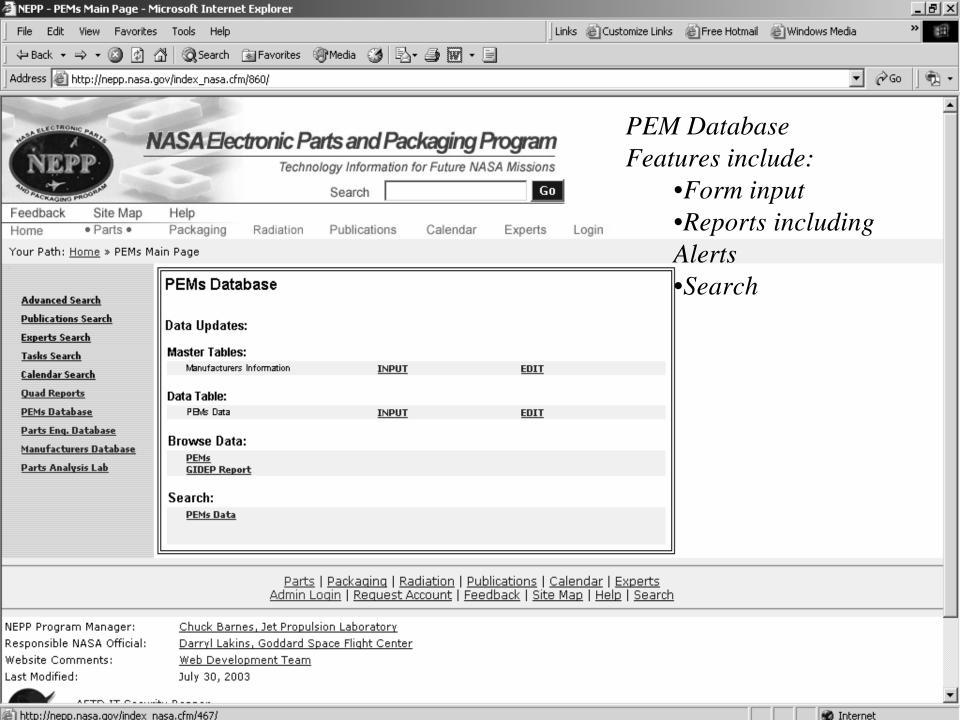
#### Website Virtual Tour

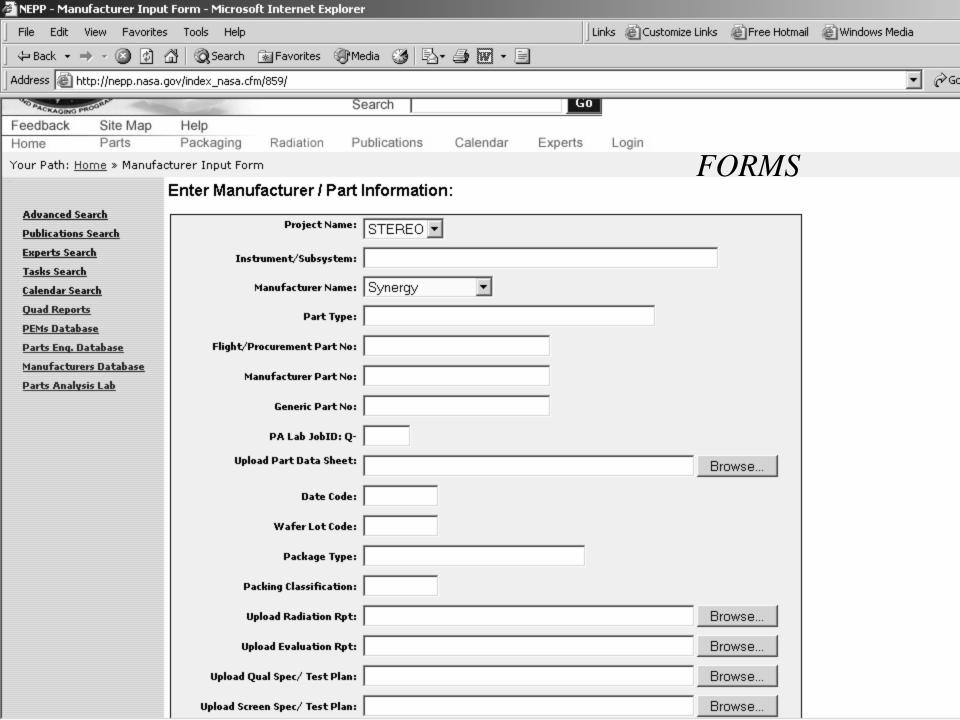
- PEM Database
- Parts Engineers Database
- Parts Analysis Database

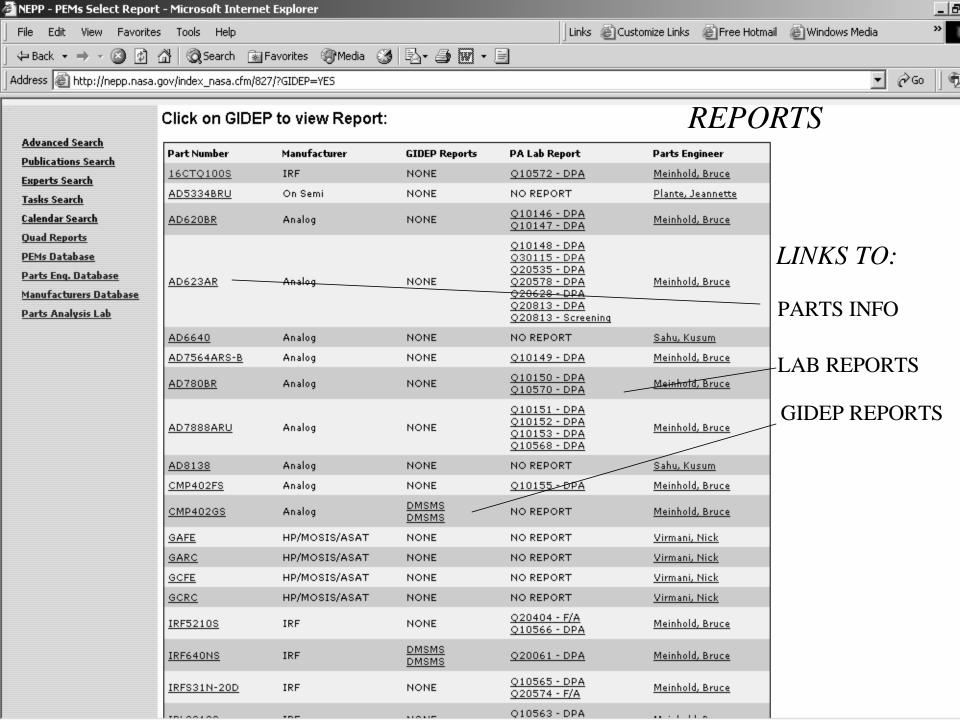


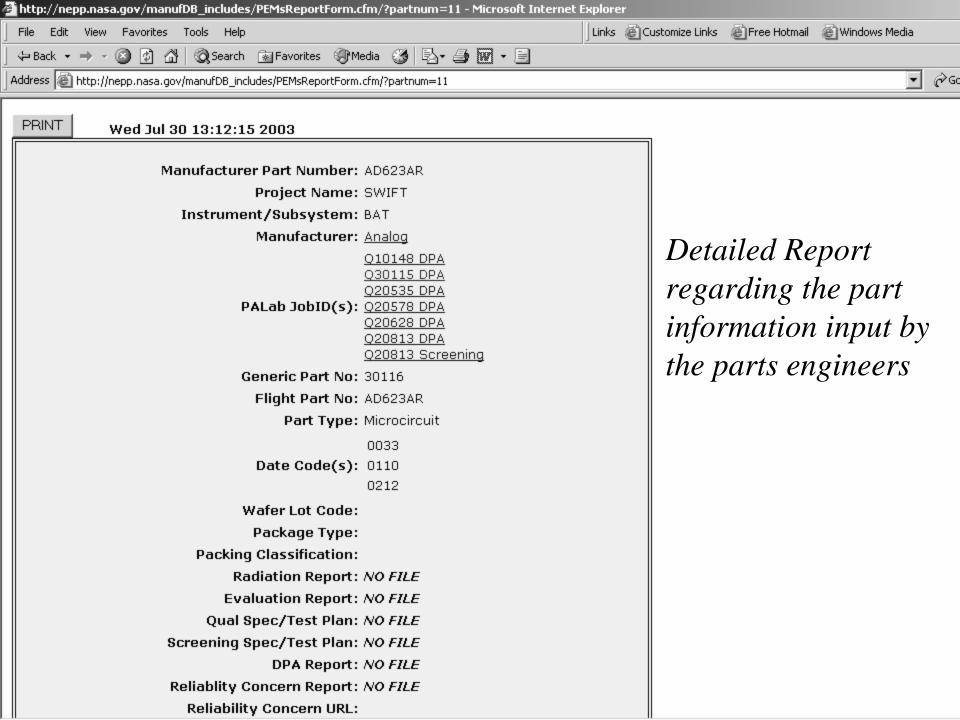
### Conceptual Structure of PEM Database

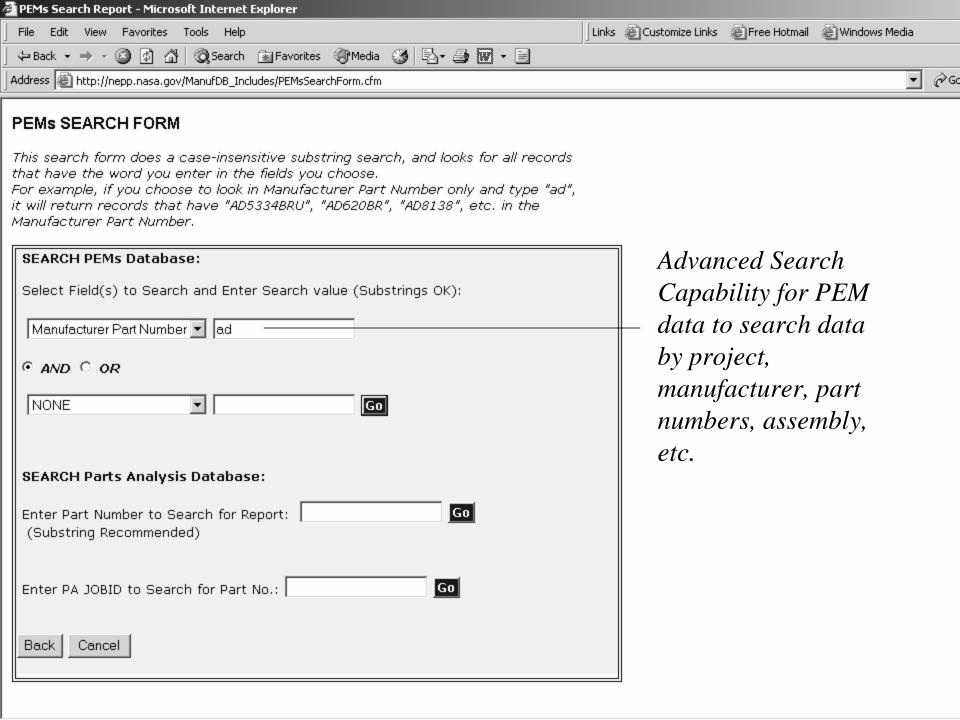


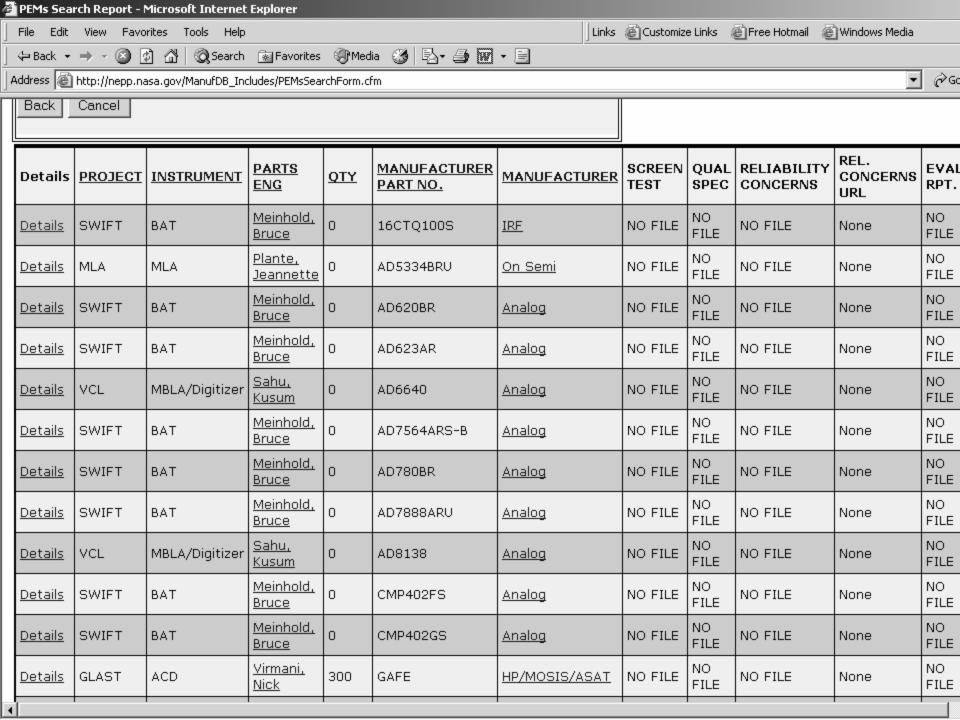


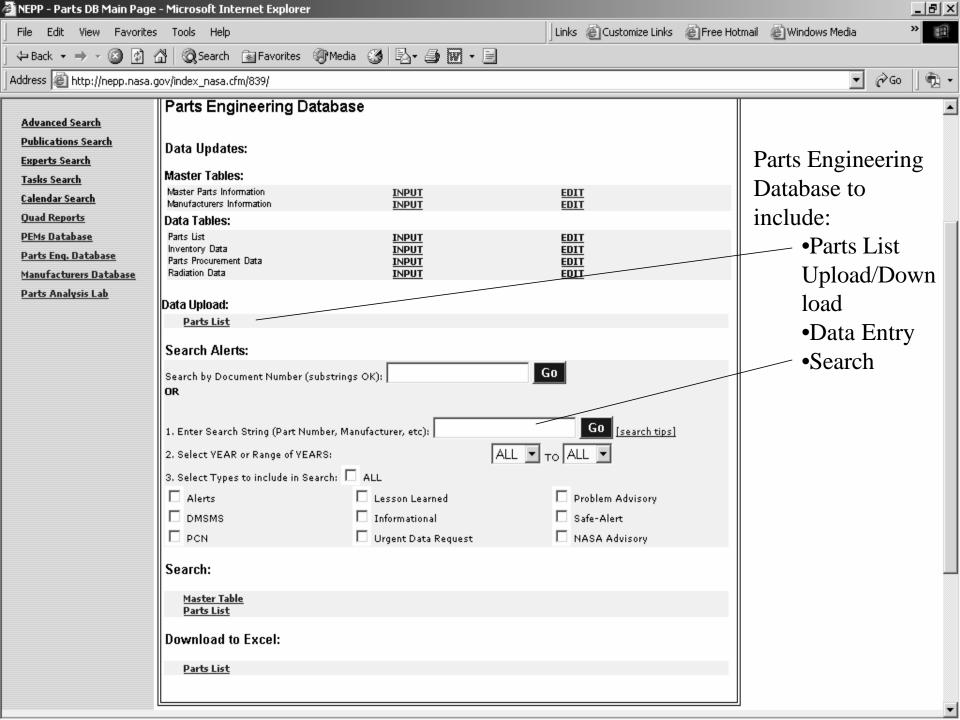


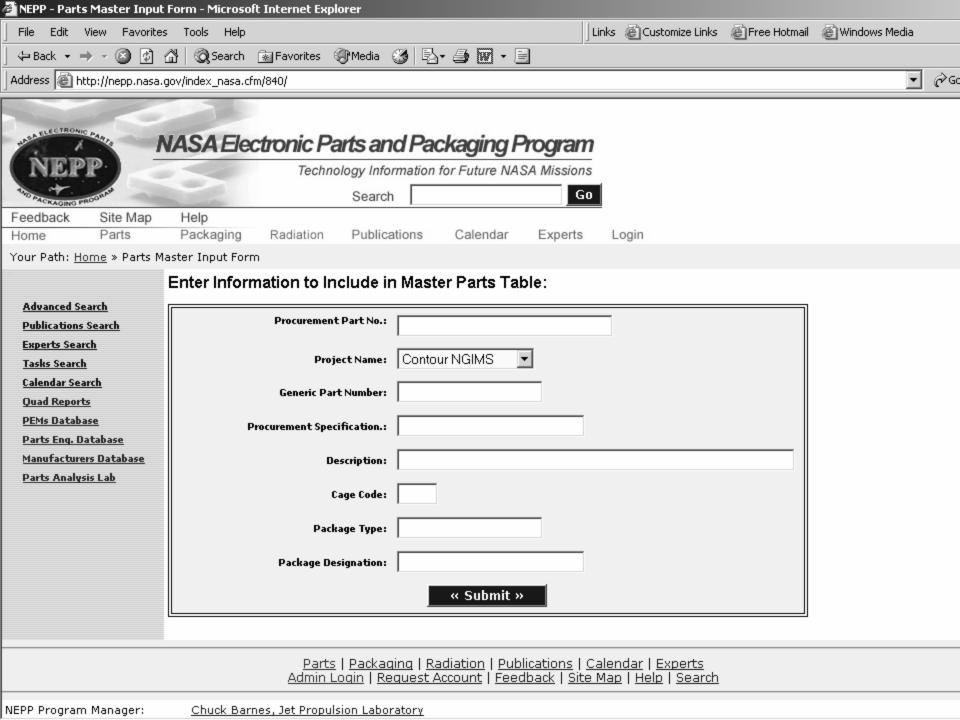


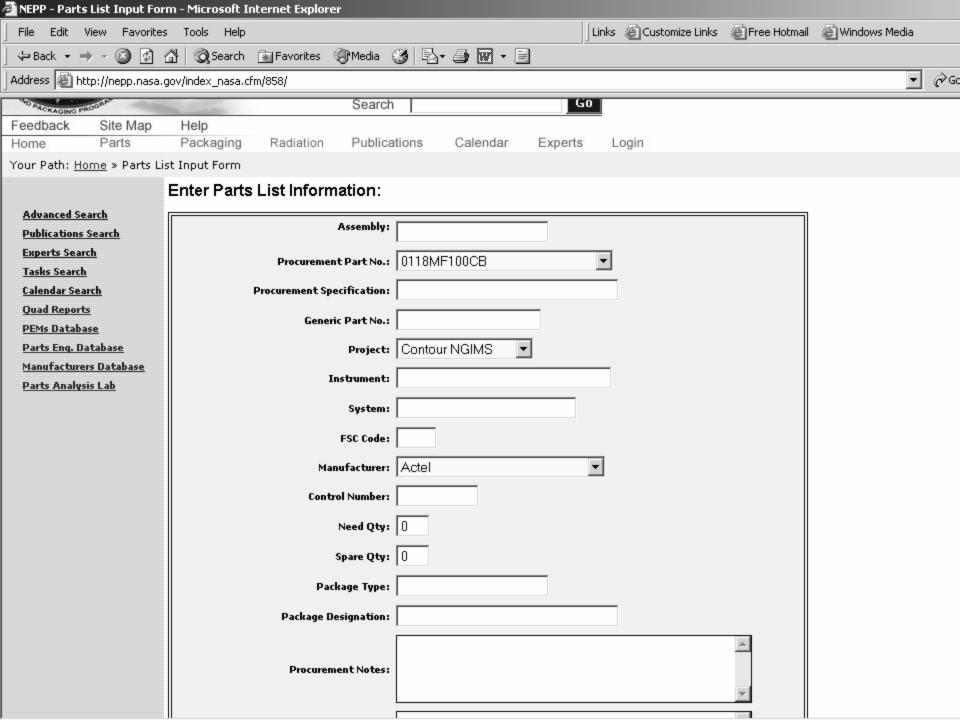


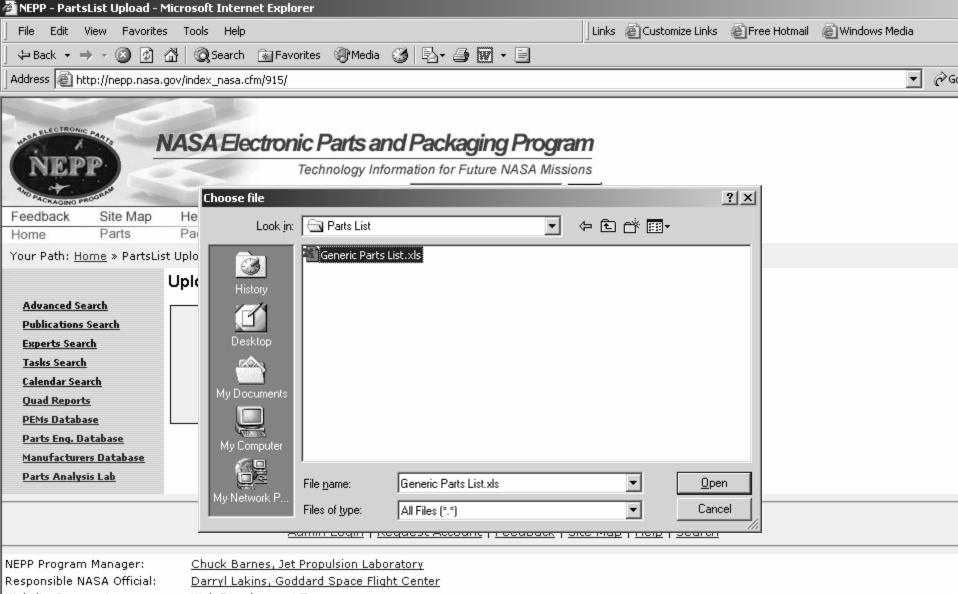










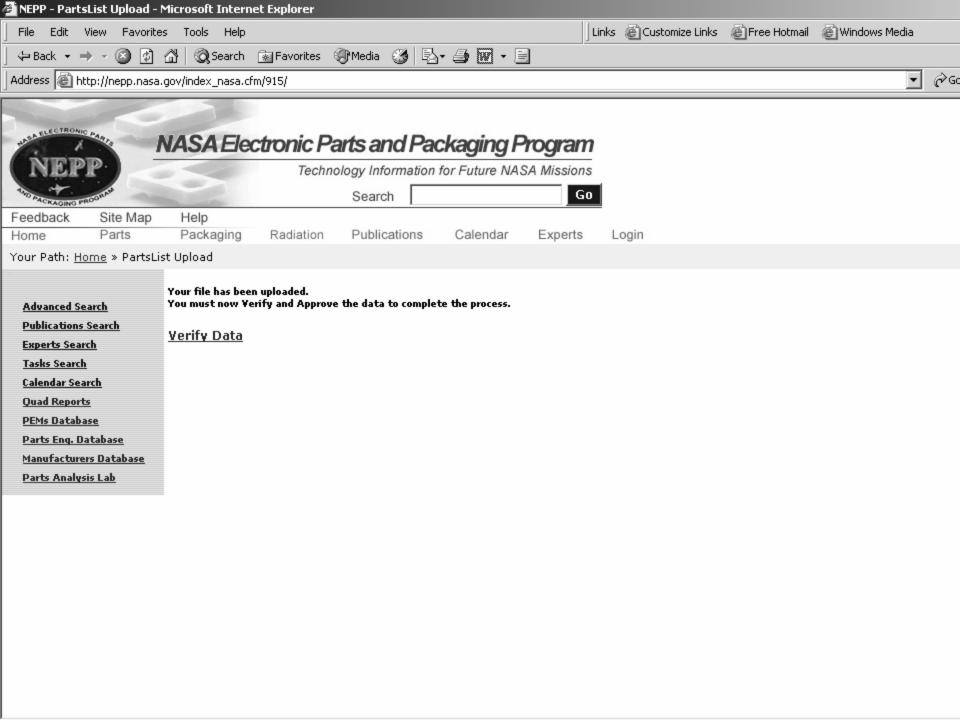


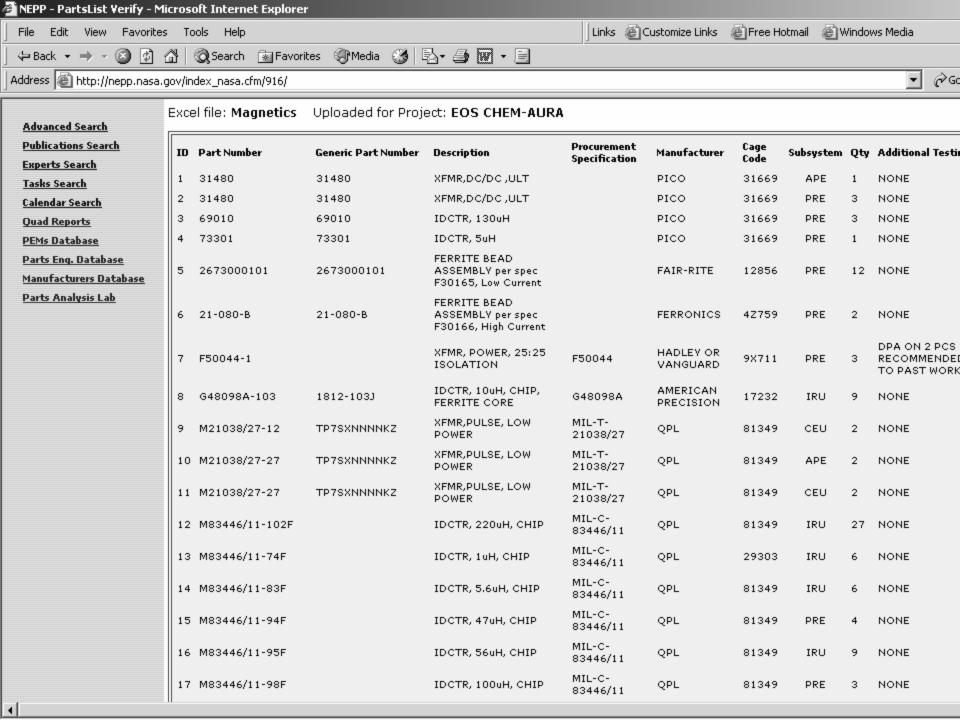
Website Comments: <u>Web Development Team</u>

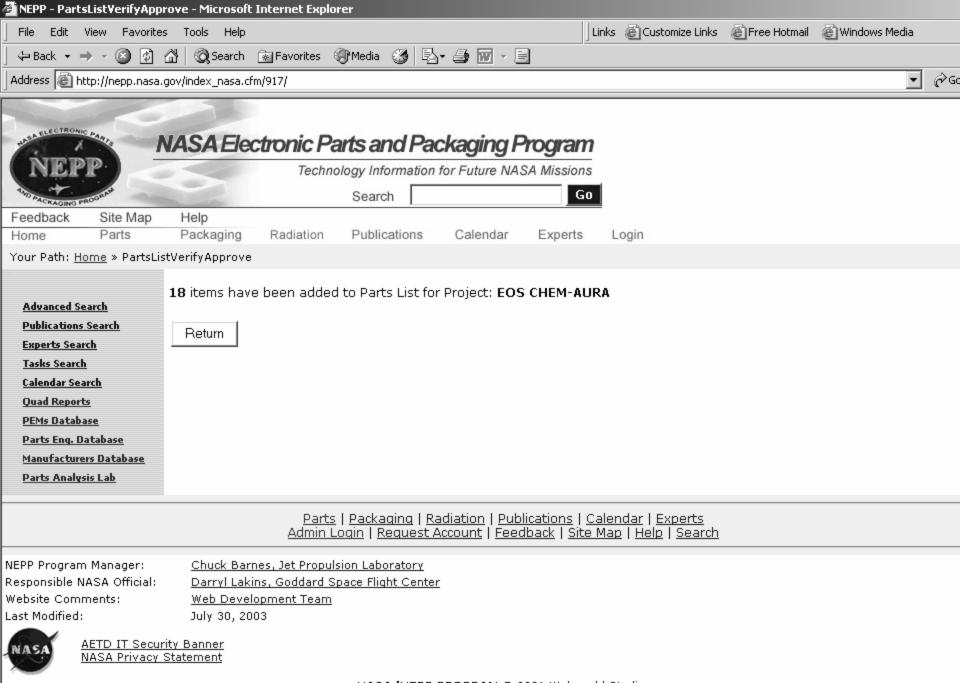
July 30, 2003

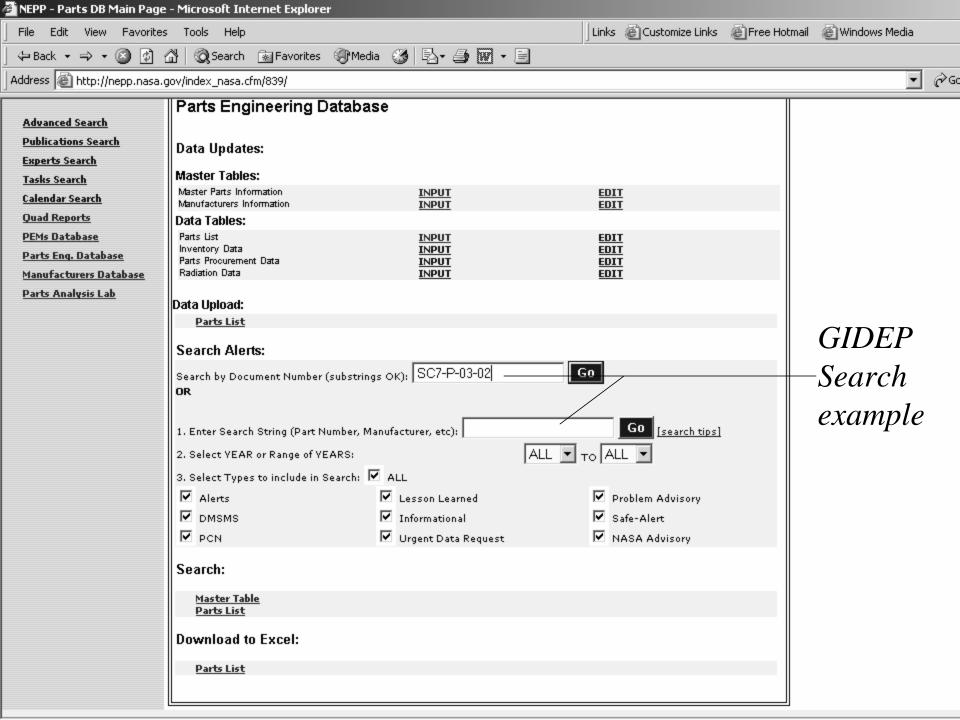


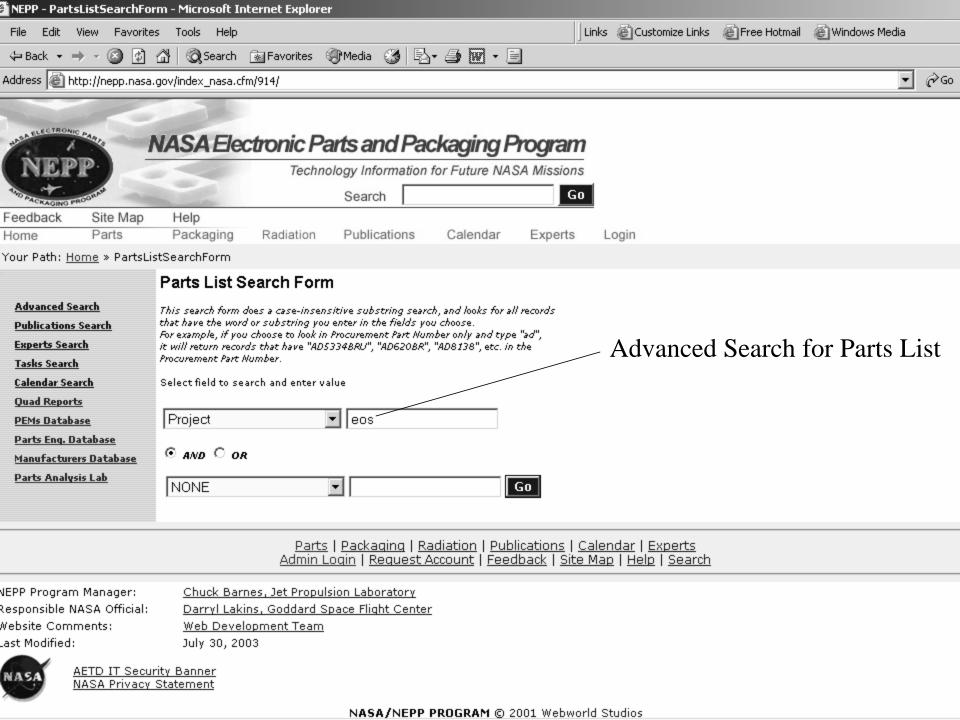
AETD IT Security Banner NASA Privacy Statement

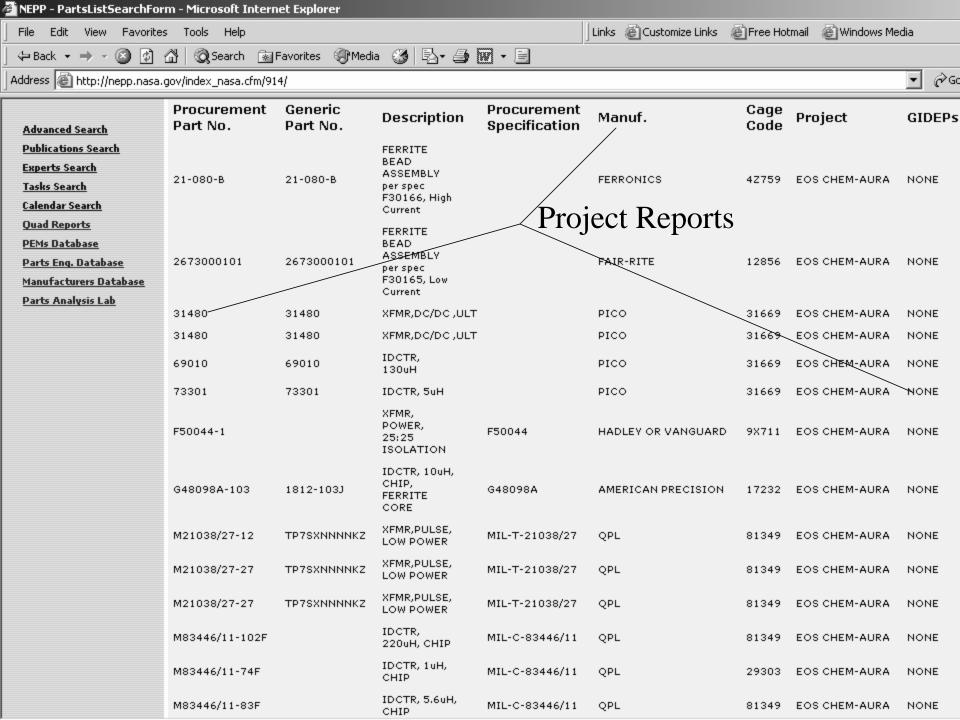


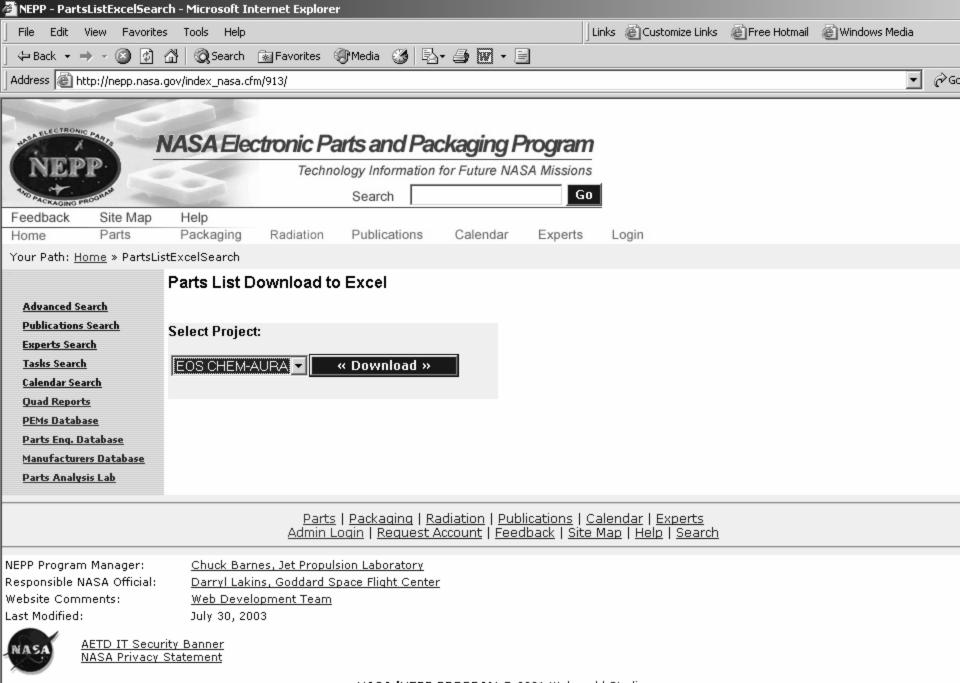


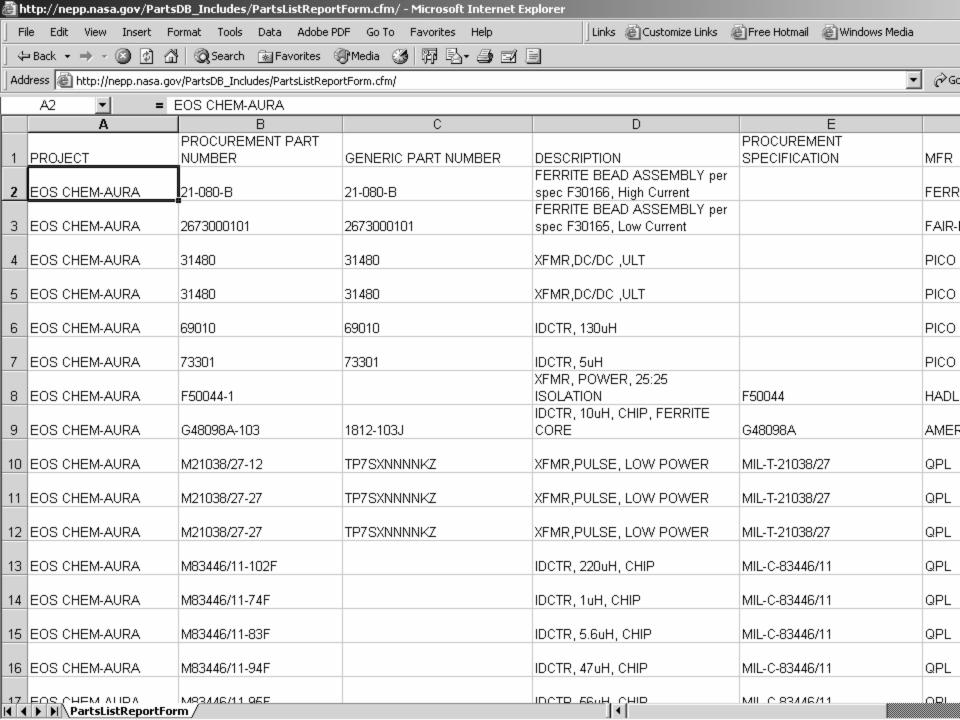


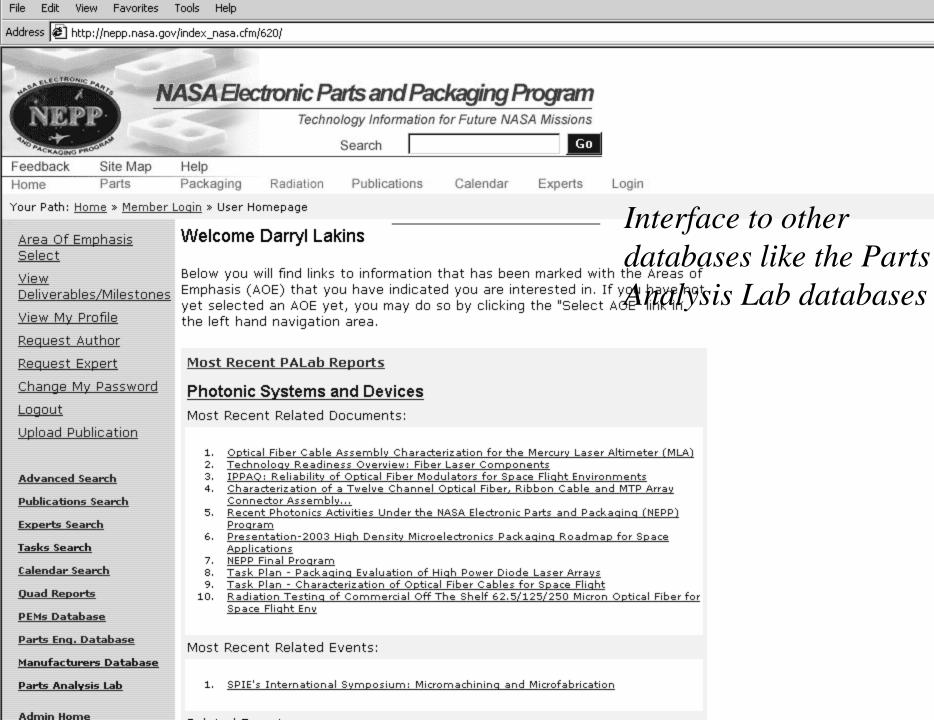


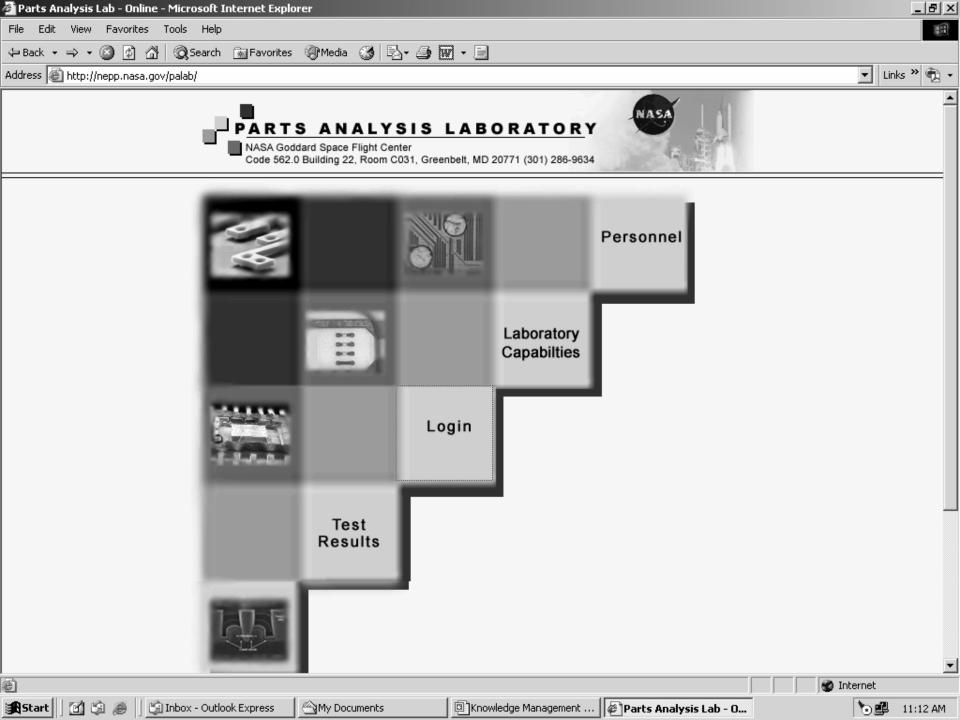


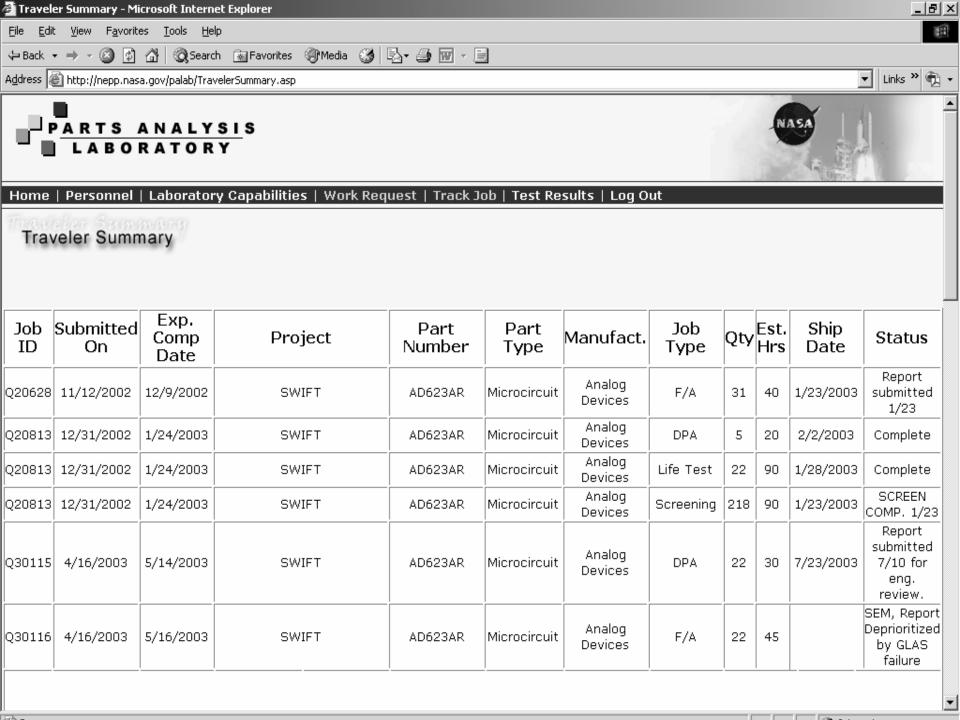


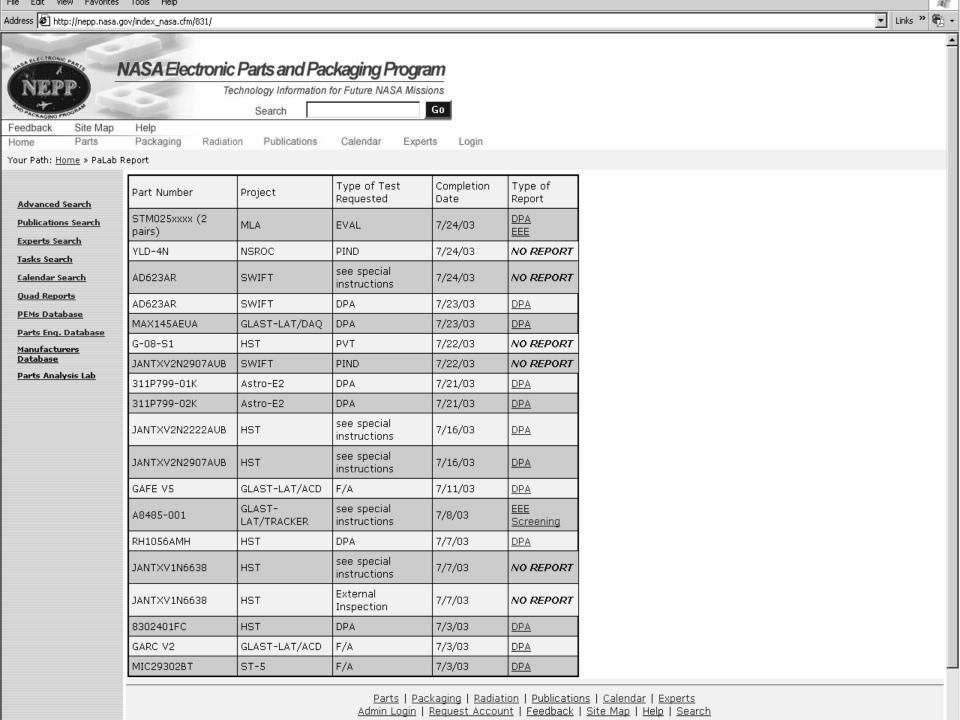














# Advanced Search and Knowledge Trees

Jeannette Plante, Dynamic Range

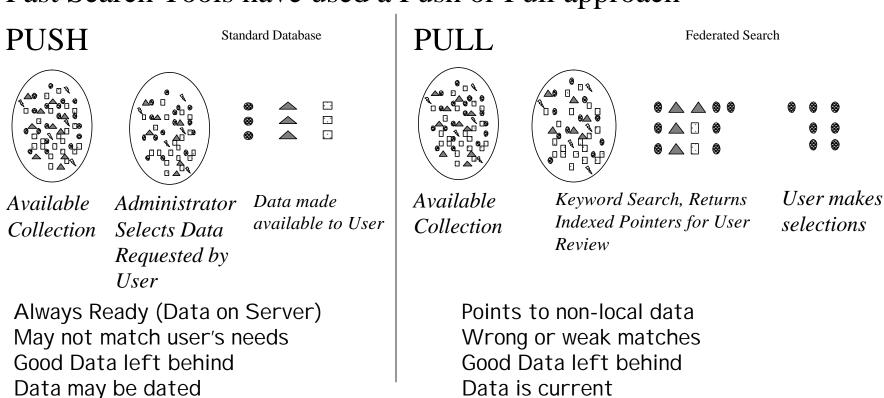
### Verity K2 Knowledge Trees

Fine tuned collections of a variety of data types (doc, pdf, tif, html)

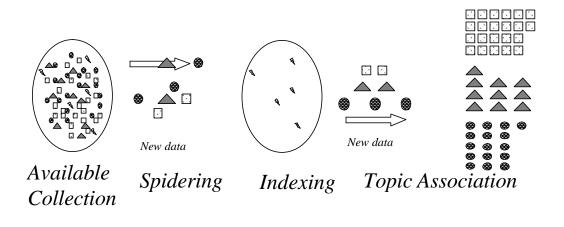
Pre-searched and sorted data for target audience

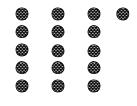
Recommended data (high usage or used by known experts)

### Past Search Tools have used a Push or Pull approach



### Knowledge Trees of Indexed Data: Combination of Pull and Push

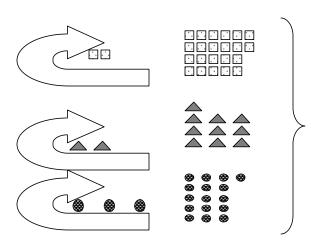




Documents are automatically pre-sorted, ready for retrieval

To Verity the Topic is a very carefully defined query that is to be run constantly.

(PULL)



Users see the Topic as a repository of organized data. Highly developed set of Topics is a Taxonomy.

(PUSH)

Level I Kr	nowledge Tier	Level II Knowledge Tier	Level III Knowledge Tier
Readily Identifiable	Readily Accessible	Not readily available May not be in electronic	Generally available
Testing Performed Test Data Failure History Vendors, Distributors Specifications/Ratings Package Dimensions	Qualification Requirements Standard Test Methods Inspection Standards Design Rules Application Rules Management Plans	form  Commodity Specific  White papers, Manufacturer Data, Drawings, Databases	Basic science and engineering concepts, tools and data

The portal both provides a <u>locating tool for documents</u> contained in its collections and introduces and <u>reinforces a standard taxonomy</u> for the portal's subject focus. As users work within the taxonomy to find documents, they <u>see and learn about the parent-child relationships between processes</u> and the details of those processes.

## Taxonomy Structure Guidelines and Best Practices

Parts Program Management (1st most mature)

#### Parts Control Plans

- •Parts Control Board
- •Parts Selection and Review
- Parts Processing

Standards and Processes (3<sup>rd</sup> most mature)

- •EEE Parts
- Advanced Packaging
- •Workmanship

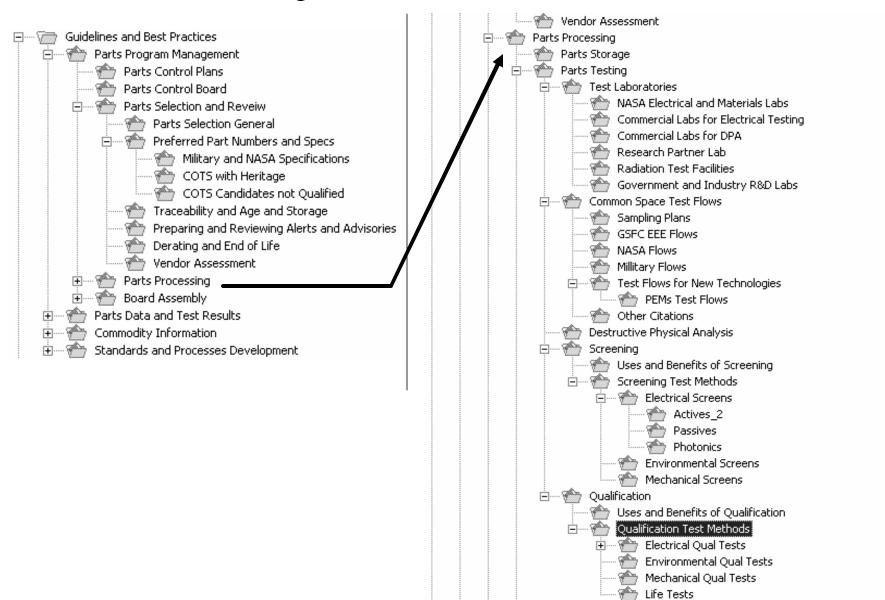
Commodity Information (3<sup>rd</sup> most mature)

- Application Notes
- Specifications

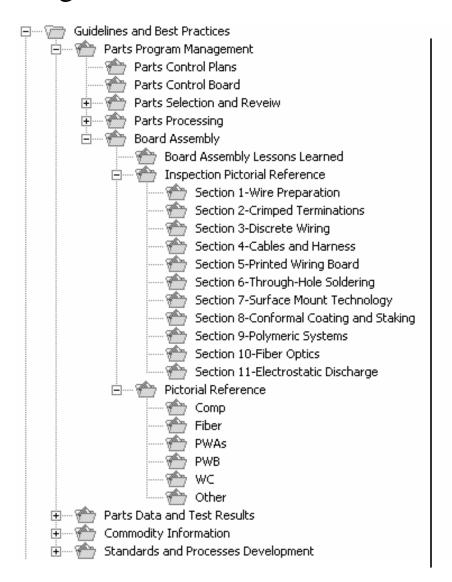
Parts Data and Test Results (2<sup>nd</sup> most mature)

- Screening Data
- •Qualification Data
- •DPA Data
- •Failure Analysis Data
- Alerts and Advisories

### Categories under Construction



### Categories under Construction cont.





### Categories under Construction cont.

